APPENDIX B
Development of the Medical Care Data Base and Practitioner Analysis Report

Medical Care Data Base

This Appendix describes the process MHCC used to construct the Medical Care Data Base (MCDB). The source data consists of almost 54 million private payer health practitioner services and over 17 million Medicare services. COMAR 10.25.06 specifically describes the data that insurance companies and HMOs must provide. The Commission staff developed the ***Data Submission Manual*** that more fully describes the formats, coding conventions, and error checks payers must use. Nevertheless, individual private payers submit data that, although in general compliance, contain significant variations in format and data element coding. In 1998, payers improved in submitting their data consistent with the state's requirement, but much improvement is still needed. Because of various errors, MHCC requires that many payers resubmit data. Once data passes initial edits, staff reprograms the data submitted by the payers into a common format, using common variable names, field lengths, and other conventions. Staff resolves any difficulties in transforming the submitted data into a common format with each payer individually, as necessary. Since the primary unit of observation in the Medical Care Data Base is the individual medical service provided to a beneficiary, staff recasts the encounter data such that the computerized record represents the individual service. A beneficiary with filed claims for two visits or encounters, who received four medical services during one visit and three medical services during the other visit, shows up in the Medical Care Data Base as seven medical service delivery records. This process of converting encounter data from the 55 private payers yielded a data base of 53,882,217 service records for privately insured patients and members of Medicare-certified HMOs. In addition, data from HCFA on claims for services under traditional Medicare (identified in this report as Medicare non-HMO) became 17,319,861 medical service records after conversion.

Exhibit 1: MHCC Edits

The data processing system employs a series of screens to delete specific medical services from the private payer and traditional Medicare components of the MCDB if:

- The recipient of the service did not have a valid Maryland ZIP code for home address.
- The services derived from a hospital facility billing for an inpatient stay.
- Dental services - unless the specific dental service was part of a more complex set of medical services being provided for an episode of injury or illness; this has the effect of eliminating most routine dental services from the data base.
- The services were provided prior to 1998.
- The services have missing date information (service-from and service-through dates).

The screening of records reduced the private payer component of the MCDB to 47,072,983 medical service delivery records and reduced the traditional Medicare component to 17,319,737 medical services.

The Practitioner Analysis Report

The primary purpose of the Practitioner Report is to summarize the utilization and costs of medical services provided by practitioners to Maryland residents. This is why only a subset of the information available in the Medical Care Data Base is of direct significance for the preparation of the report. This section describes the process of developing the data from the Medical Care Data Base as required specifically for this report.

To best use the Medical Care Data Base to generate the analyses reported, the MCDB is subjected to additional rounds of data editing and subsetting. This process involves the removal of services outside the scope of this report and the salvaging of incomplete information provided by individual payers, where that is possible. Exhibit 2 lists the most important edits that were used to create the subset of data used in this report.

Exhibit 2: Services Excluded from Practitioner Analysis

- Services provided in 1999.
- Services generating the claim were not covered under the insurance plan.
- A secondary insurer received the claim for service.
- Services were for a medical procedure code other than a valid CPT-4, HCPCS, or valid "homegrown" private payer-specific procedure code.
- Services whose procedure code indicated a technical component "TC" modifier or ambulatory surgical center (ASC) facility service "SG" modifier.
- Durable medical equipment services.
- Capitated services were separated from other services by placing them in a separate file.[1]

Most of the edits and exclusions eliminate services that for other types of analyses could be included. As result of the service exclusions, the number of privately insured and Medicare HMO FFS service records that were available for analysis was reduced to 24,295,876 (for private payers and Medicare-certified HMOs) and 17,024,270 (Medicare non-HMO), respectively.

[1] Several of the screens did not apply to the Medicare non-HMO data since inpatient services and services provided in 1999 are not present on the files submitted to MHCC by HCFA.

In addition to excluding unusable service delivery records, staff sometimes replaced missing values for specific variables by imputing values, to avoid deletion of the service record from the analysis files. For example, about 29 percent of the private payer service records remaining after exclusions did not contain an indicator as to whether the payer was the primary or secondary insurer on that claim. The ratio of reimbursed amounts plus patient liability to amount allowed was calculated for those records known to be primary claims and secondary claims; it appeared that a ratio of 0.35 was a reliable threshold for separating the primary from secondary claims. Consequently, staff assumed that all service records that included no indication of primary versus secondary insurance were with the primary insurer if the ratio was 0.35 or above, and that service records with ratios below 0.35 were secondary claims. These secondary claims were omitted from further analysis.

Another example is the imputation of work relative value units (work RVUs) for some service records. (The imputation process is described in Chapter 2 of this report.) In addition, the analysis examined financial variables and included development of a system of rules for recoding financial variables when necessary.

From the pool of 24,295,876 private payer medical services (Private Payer Analysis file), staff classified 15,798,462 records as privately insured fee-for-service (private non-HMO), which includes not only traditional indemnity plans, but also preferred provider organizations. The system included all individuals in this payer category in the analysis files if they were younger than 65 years of age as of December 31, 1998 and met other specific conditions.

The data processing system assigned the service records of persons under the age of 65 on December 31, 1998 (from the same pool of 24,295,876 medical services). This group consisted of HMO members whose treatment had generated both a bill and payment to the payer category private HMO FFS component (identified in this report as private HMO FFS). State law stipulates that HMOs must provide data to the Commission on this group of encounters, the overwhelming majority of which involve referrals to specialty care. This subset comprises 5,323,795 service delivery records.

From the same pool of 24,295,876 medical services, selected service records were available for measuring the volume, intensity, and expenditures on services provided by private payers to Maryland residents insured under the Medicare managed care plan. An innovation in this year's report is to provide information on that subset of Maryland Medicare beneficiaries who belong to one of the eight certified Medicare HMOs[2] in the state. Staff assigned each service to the Medicare HMO category if the payer was one of the eight certified Medicare HMOs and the recipient was between 65 years and 110 years of age (inclusively) as of December 31, 1998. A total of 911,224 service records fell into the Medicare HMO FFS category.

[2] The certified Medicare HMOs in Maryland include Aetna U.S. Healthcare, Inc., Carefirst-BCBS of MD, Inc., CIGNA Healthcare Mid-Atlantic Inc., Kaiser Foundation Health Plan of the Mid-Atlantic States, Inc., NYLCARE Health Plans of the Mid-Atlantic, Inc., Optimum Choice Inc., Prudential Healthcare Plan, Inc., and United Healthcare of the Mid-Atlantic, Inc.

This left a residual of about 2.2 million service records that could not be assigned a payer and delivery system category. Most of these records were for individuals under the age of 65 who were identified as Medicare enrollees (either in Medicare non-HMO or in a Medicare HMO), or were 65 or older but whose primary insurer was a private insurance plan. Many of the recipients in the former group are enrollees in special Medicare programs for the disabled, such as the End Stage Renal Disease (ESRD) Program. Many of the people in the latter group are likely to be persons beyond the threshold age of eligibility for Medicare, but who still work and receive their primary coverage through employer-provided health insurance packages.

The system further limits those included in the Medicare analysis file to recipients in the age group 65 to 110, inclusively; it contains 15,229,400 service records comprising the payer group Medicare non-HMO.

In addition to the information on billed services submitted to the Commission by the private payers, data are also available on capitated services for which no bill or payment was generated upon receipt of the service. The majority of these capitated services involve primary care. Payers must provide data on FFS encounters and specialty care capitated encounters, but, in addition, they frequently provide information on primary care capitated services to the Commission. The Capitated Data Analysis file contains 3,289,853 medical services extracted from the private payer MCDB (47,072,983) after applying all the logical screens listed earlier, except for the screen identifying secondary insurer and the screen on non-covered services. These edits were not applicable to the capitated data. From this capitated file, 2,869,870 services were provided through private non-HMOs and the remaining 419,983 were provided by Medicare HMOs.